## AMENDMENTS TO THE SPECIFICATION

Please delete paragraphs 2 through 9 on Page 1.

Please add the following paragraphs after paragraph 1 on Page 1.

U.S. Application Serial No. 08/833,198, Patent No. 6,286,058, *Apparatus and Methods for Automatically Rerouting Packets in the Event of a Link Failure*

U.S. Application Serial No. 08/837,073, Patent No. 6,301,223, *Method of Using Routing protocols to Reroute Packets during a link Failure*

U.S. Application Serial No. 08/843,061, Patent No. 6,208,656, *Methods for Dynamically Assigning Link Addresses and Logical Network Addresses*

U.S. Application Serial No. 08,843,056, Patent No. 6,178,455, *Router which Dynamically Requests a Set of Logical Network Addresses and Assign Addresses in the Set to Hosts Connected to the Router*

U.S. Application Serial No. 08/838,833, Patent No. 6,618,353, *Router for Use with a Link that has a Set of Concurrent Channels*

U.S. Application Serial No. 08/832,714, Patent No. 6,295,298, *Method of Dynamically Assigning A Logical Network Address and a Link Address*

U.S. Application Serial No. 08/840,304, Patent No. 6,249,523, *Router for which a Logical Network Address which is not Unique to the Router is the Gateway Address in Default Routing Table Entries*

U.S. Application Serial No. 08/835,917, Patent No. 6,308,328, *Usage Statistics Collection for a Cable Data Delivery System*

U.S. Application Serial No. 08/835,916, Patent No. 6,324,267, *Two-Tiered Authorization And Authentication for a Cable Data Delivery System*

U.S. Application Serial No. 08/835,966, Patent No. 6,052,819, *System and Method for Detecting Correcting and Discarding Corrupted Data Packets in a Cable Data Delivery System*

Please amend the following paragraphs as indicated.

(Page 3, Paragraph 2)

A great many homes do in fact have a high bandwidth connection, namely that provided by cable television. The problem with this connection is that it is one way. A PC may receive data via a home's CATV cable, but it cannot use the cable to send data. Again, ways of making the CATV system bidirectional have been known for years. For example, in the early 1980's, Scientific-Atlanta, Inc. introduced and marketed a product known as the Model 6404 Broadband Data Modem for use with bidirectional CATV systems. Scientific-Atlanta, Inc. has also recently filed U.S. Patent Applications Serial Numbers 08/627,062, filed April 3, ~~1966, 08/738,6681,~~ 1996, 08/732,668, filed October 16, 1996, and a continuation-in-part titled *System and Method for Providing Statistics for Flexible Billing in a Cable ~~Environment,~~ Environment*, Koperda~~,~~ et al., filed March 14, 1997 which describe bidirectional CATV systems. As with the telephone systems, the problem here is not the technology, but the fact that its introduction requires extensive modification of most existing CATV systems.

An example of such a system is the one disclosed in ~~Moura, et al.~~ Moura et al., *Asymmetric Hybrid Access System and Method*, U.S. Patent 5,586,121, issued December 17, 1996, and in ~~Moura, et al.~~, Moura et al., *Remote Link Adapter for use in TV Broadcast Data*

*Transmission System*, U.S. Patent 5,347,304, issued Sept. 13, 1994 [[,]] . In this system, the head end of a cable system has high bandwidth access to the Internet or to other networks and access via CATV cables and the telephone system to households or businesses with PCs. Data received from these networks is sent to PCs connected to the cable system's cables and responses from the PCs are collected via the telephone system and sent to the network. In the home or business, the PC is connected either directly or via a local area network to a device which includes both a radio frequency modem and a standard analog telephone modem. The radio frequency modem is connected to the CATV cable. It receives and decodes the data sent on the CATV cable and provides it to the PC. The telephone modem is connected to a standard telephone line. It receives data from the PC and sends it to the CATV head end, which in turn forwards it to the Internet or other networks.

(Page 5, Last Paragraph)

**Summary of the Invention**

The problem of wasting IP address and link addresses by statically assigning them to hosts and cable modem is solved as follows: when the cable router becomes active, it first reads data from the CATV cable from which the CATV system can determine the CATV cable the cable router is attached to. The cable router then sends a message containing this information via the telephone line to the head end, which assigns a set of IP addresses for the ~~PC's~~ PCs connected to the cable router and a link address for the cable router on the cable and sends a message containing the set of IP addresses and the link address to the cable router. The cable router then begins listening to the cable at the link address and responds to requests by the hosts for IP addresses by assigning them IP addresses from the set.

(Page 6, Paragraph 10)

**FIG. 9** is a diagram of routing tables for router ~~100~~ 101, modem pool 135, RF modem 106, and communications manager 102;

(Page 8, Paragraph 1)

The Internet is a logical network, not a physical network. Internet packets 301 are transported across a variety of different physical networks. While an Internet packet 301 is in a given physical network, it is transported in the same fashion that the physical network transports any kind of data. For example, one common kind of physical network is a LAN that uses the 10 base T protocol. One example of such a LAN is a LAN that uses the Ethernet® protocol developed by Xerox Corporation. In the Ethernet protocol, data moves in packets called *frames*. Each frame has a preamble 313, a destination Ethernet address 315, a source Ethernet address 317, an ethertype field, which specifies a type of the protocol, a data field 321, which carries the data, and a frame check sequence 323, which is an error checking code. When an Ethernet frame 311 is carrying an IP datagram 301, IP datagram 301 simply occupies data field ~~301~~ 321. It is worth pointing out here that the Ethernet protocol does not examine the contents of ~~data 321~~ IP datagram 301. There may of course be many levels of protocols between an IP datagram 301 and the physical medium upon which the IP datagram is being transported. In the following, only the next level down from the IP level is of concern, and this level is termed generically the *link level*, with the addresses at that level being termed *link addresses*. Thus, if the link level employs the Ethernet protocol, the link addresses are DA 315 and SA 317.

(Page 8, Paragraph 2)

The IP addressing and routing architecture of the cable data network ~~defines~~ define how the IP addresses which are used to route Internet protocol packets (datagrams) in the Internet are mapped onto the networks which make up the cable data network's link level. The architecture has a number of fundamental principles:

(Page 22, Last Paragraph)

~~FIG. 10~~ FIG. 11 also shows ARP cache 1119 for host 108(k). Cache 1119 has a cache entry 1120 for each host 108 connected to LAN 133 that currently has an IP address assigned to it, shown at 1122, and a cache entry 1120(j) for RF modem 106(j). In entries 1122, each entry has the IP address 1121 for the host 108 to which the entry belongs and the LAN address 1123 for the host 108; entry 1120(j) has reusable IP address 1117 for RF modem 106(j) and RF modem 106(j)'s LAN address 1125.

(Page 24, Last Paragraph)

The routing table for communications manager 102 is shown at 949. Again, there are three entries 951 of interest. Entry 951(i) routes all IP packets destined for the networks managed by communications manager ~~937~~ 102; in the destination IPA portion of this entry, everything is masked but the net ID portion of the address. Entry 951(j) routes packets intended for communications manager ~~937~~ 102 itself; the destination IPA and the gateway IPA are IPA 203(c) for communications manager 102. Default entry 951(k), finally, has as its gateway IPA the IP address 203(b) of router 101; consequently, all other IP packets are routed back to router 101 via LAN 120.

(Page 25, First Paragraph)

FIG. 10, finally, shows the implementation of ARP cache 1001 in communications manager 102. The technique used to implement the table is hashing, which is a standard technique for reducing search time in large tables. In ARP cache 1001, the IP addresses 1003 for incoming packets addressed to a host 108 are hashed, that is, they are input to a ~~function 105~~ function 1005 which produces small integer values 1009 from the IP addresses. The small integer is used as an index into a hash array 1011, whose elements are pointers 1013 to lists of IP addresses that hash to the index of element 1013. Each list entry 1015 has three fields: field 1017 contains a destination IP address; field 1019 is a pointer to the next list entry 1015 in the list, and CCB pointer 1021 is a pointer to a data structure called a CCB block 1023 which specifies the frequency, pipe number, and linkID to which packets having IP address 1017 may be sent. The fields of CCB block 1023 are IP address 1025, which has the same IP address as IPA 1017, modulator number 1029, which effectively specifies the frequency, pipe number 1031, which specifies the pipe, linkID 1033, which specifies the RF modem 106, and next pointer 1035 which specifies the next CCB block 1023. Translation of an IP address into the corresponding <channel, pipe number, linkID> triple works by hashing the IP address to get the index of list pointer 1013, following list pointer 1013 to the list, searching list entries 1015 until one is found that has the IP address being translated as its IP address 1017, and going to that list entry 1015's CCB block 1023 to find the information needed to form the triple. It is worth noting here that it is the structure of ARP cache 1001 which makes it possible in a preferred embodiment to use any IP address in the network of the cable 124 to which an RF modem 106(j) is attached for a host 108 that is attached to RF modem 106(j).

(Page 27, Last Paragraph)

When IPA manager 1204 has the Net ID, it can assign the IP addresses. IPA manager 1204 has a list 1211(i) of free IP addresses for each network B 208(i), and it takes a set of IP addresses that has the number of addresses specified in address range 1216 from the free list 1211 for the network B 208(i). IPA manager 1204 then provides an ~~SNMB~~ SNMP set message with the IP addresses to SNMP agent 1203. As shown by arrow 1241, SNMP agent 1203 sends the message to SNMP agent 1233 in communications manager 102.

(Page 35, Paragraph title of the last paragraph)

**Reusable IP Addresses for RF Modems 106: ~~FIGs. 11 and 13~~ FIG. 11**